

Applicant: Shiu-Ko Jangjian, et al.

Serial No.: 10/761,654

Attorney Docket No.: 67,200-1200

REMARKS

Claims 1-20 are pending herein.

Claims 1-20 are rejected.

Claims 1, 9 and 13 are currently amended.

Drawings

It was stated that Figure 1 of the drawings should be designated by a legend such as -Prior Art- because Figure 1 is a schematic of a typical conventional process chamber in implementation of the present invention and therefore, only that which is old is illustrated.

It will be noted that Figure 1 on the replacement drawing sheets are submitted with the present response recites the legend -Prior Art--. Therefore, reconsideration of the drawings is respectfully solicited.

Figure 2 of the drawings was objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the reference sign(s) 51, 52, 53, 54 mentioned in the descriptions but do include the reference character(s) 51, 52, 53, 54 not mentioned in the specification.

It will be noted that in Figure 2 of the replacement drawings, the reference characters 51, 52, 53 and 54 are replaced with reference signs S1, S2, S3 and S4, respectively.

Therefore, it is respectfully submitted that the replacement drawing sheets overcome the basis for the objection

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to the drawings. Reconsideration and removal of the objection to the drawings is therefore respectfully solicited.

**Claim rejections under 35 U.S.C. 102**

Claims 1-4 and 13-16 were rejected under 35 U.S.C. 102(b) as being anticipated by Pang, et al., U.S. 2001/0016674.

In light of the amendments to the claims, it is respectfully submitted that Pang, et al. fails to anticipate claims 1-4 and 13-16 under 35 U.S.C. 102(b).

Reference is made to MPEP 2131, which states, "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference". *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

*Pang et al. fails to teach invention of claims 1-4*

It is respectfully submitted that Pang et al. fails to disclose "each and every element" as set forth in amended claim 1, and claims 2-4 as dependent from amended claim 1, since Pang et al. fails to disclose a method of cleaning a process chamber, comprising "...maintaining a temperature of from about 65°C to about 300°C in said process chamber...", as set forth in amended claim 1, and therefore, defined by claims 2-4 as dependent from amended claim 1.

In contrast, Pang et al. discloses a chamber-cleaning

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temperature of 400°C (paragraph 0084 of Pang et al.).

Accordingly, it is respectfully submitted that Pang et al. fails to disclose "each and every element" as set forth in claims 1-4, as required for anticipation by the Federal Circuit decision in *Verdegall Bros. v. Union Oil Co. of California*.

It is therefore respectfully submitted that Pang et al. fails to anticipate claims 1-4 under 35 U.S.C. 102(b). Reconsideration and allowance of claims 1-4 is therefore respectfully solicited.

*Pang et al. fails to teach invention of claims 13-16*

It is respectfully submitted that Pang et al. fails to disclose "each and every element" as set forth in amended claim 13, and claims 14-16 as dependent from amended claim 13, since Pang et al. fails to disclose a method of expediting cleaning of a process chamber using nitrogen trifluoride, comprising "...maintaining a temperature of from about 65°C to about 300°C in said process chamber...", as set forth in amended claim 13, and therefore, defined by claims 14-16 as dependent from amended claim 13.

Accordingly, it is respectfully submitted that Pang et al. fails to disclose "each and every element" as set forth in claims 13-16 as required for anticipation by the Federal Circuit decision in *Verdegall Bros. v. Union Oil Co. of California*.

It is therefore respectfully submitted that Pang et al. fails to anticipate claims 13-16 under 35 U.S.C. 102(b).

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Reconsideration and allowance of claims 13-16 is therefore respectfully solicited.

Claim rejections under 35 U.S.C 103

Claims 9, 10, 17 and 18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Pang, et al., U.S. 2001/0016674.

In light of the amendments to the claims, it is respectfully submitted that Pang et al. fails to render claims 9, 10, 17 and 18 obvious within the contemplation of 35 U.S.C. 103(a), as hereinafter set forth in detail.

Reference is made to MPEP 2143.03, which states, "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious". In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

*Pang et al. fails to teach invention of claims 9 and 10*

It is respectfully submitted that Pang et al. fails to teach or suggest all of the limitations of amended claim 9, and claim 10 as dependent from amended claim 9, since Pang et al. fails to teach or suggest a method of cleaning a process chamber, comprising "providing a gas mixture comprising nitrous oxide and nitrogen trifluoride in a nitrous oxide:nitrogen trifluoride volume ratio of at least about 0.8", in combination with "generating a plasma from [a] gas mixture using a radio frequency power of from about 1 watt/cm<sup>2</sup> to about 20 watts/cm<sup>2</sup>",

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as set forth in amended claim 9 and defined by claim 10 as dependent therefrom, according to the Federal Circuit decision in *In re Fine*.

In contrast, Pang et al. (paragraph 0084) teaches plasma formation using a ratio of nitrogen trifluoride to nitrous oxide to nitrogen of "approximately 5:2:10", in combination with a "power supply powered at 1000 Watts". The ratio of nitrous oxide to nitrogen trifluoride according to the Pang et al. method is about 2:5, which corresponds to 0.4.

Reference is made to MPEP 2145(X)(B), which states, "The admonition that 'obvious to try' is not the standard under [section] 103 has been directed mainly at two kinds of error. In some cases, what would have been 'obvious to try' would have been to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful...". *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

It is respectfully submitted that an "obvious to try" rationale must be used to sustain an obviousness rejection of claims 9 and 10, as amended, in view of Pang et al., in contravention of the Federal Circuit decision in *In re O'Farrell*, since Pang, et al. fails to provide any indication that carrying out a plasma cleaning process having the parameters recited in amended claim 9 would likely be

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successful. Rather, Pang et al. simply infers that a plasma-cleaning process can be successfully carried out using the particular parameters set forth in paragraph 0084 of Pang et al.

Therefore, it is respectfully submitted that Pang et al. fails to render claims 9 and 10 obvious under 35 U.S.C. 103(a). Reconsideration and allowance of claims 9 and 10 is therefore respectfully solicited.

*Pang et al. fails to teach invention of claims 17 and 18*

It is respectfully submitted that Pang et al. fails to teach or suggest all of the limitations of claims 17 and 18, as dependent from amended claim 13, since Pang et al. fails to teach or suggest a method comprising "...forming a gas mixture...maintaining a temperature of from about 65°C to about 300°C in [a] process chamber", in combination with "forming nitric oxide radicals and fluoride radicals in the process chamber by generating a plasma from said gas mixture using a radio frequency power of from about 1 watt/cm<sup>2</sup> to about 20 watts/cm<sup>2</sup>", as set forth in amended claim 13 and defined by claims 17 and 18 as dependent therefrom, according to the Federal Circuit decision in *In re Fine*.

In contrast, Pang et al. (paragraph 0084) teaches a chamber cleaning temperature of 400°C and a "power supply powered at 1000 Watts". Pang et al. fails to provide any indication that the limitations set forth in amended claim 13, and therefore, defined by claims 17 and 18, would be successful in carrying out

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a plasma-cleaning process. Thus, an "obvious to try" rationale would be necessary to sustain a rejection of claims 5-8, as dependent from amended claim 1, as obvious over Pang et al., in contravention of *In re O'Farrell*, cited hereinabove.

Therefore, it is respectfully submitted that Pang et al. fails to render claims 17 and 18 obvious under 35 U.S.C. 103(a). Reconsideration and allowance of claims 17 and 18 is therefore respectfully solicited.

Claims 5-8, 11, 12, 19 and 20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Pang et al. (U.S. 2001/0016674) in view of Shang et al. (U.S. Pat. No. 5,788,778).

In light of the amendments to the claims, it is respectfully submitted that Pang et al. in view of Shang et al. fails to render claims 5-8, 11, 12, 19 and 20 obvious under 35 U.S.C. 103(a), since Pang et al. in view of Shang et al. fails to teach or suggest all of the limitations of claims 5-8, 11, 12, 19 and 20.

*Pang et al. in view of Shang et al. fails to teach invention of claims 5-8*

It is respectfully submitted that Pang et al. in view of Shang et al. fails to teach or suggest all of the limitations of claims 5-8, as dependent from amended claim 1, since Pang et al. in view of Shang et al. fails to teach or suggest a method

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comprising "providing a gas mixture maintaining a temperature of from about 65°C to about 300°C in [a] process chamber; introducing said gas mixture into the process chamber; and generating a plasma from said gas mixture", as set forth in amended claim 1 and defined by claims 5-8 as dependent therefrom according to the Federal Circuit decision in *In re Fine*.

In contrast, Pang et al. (paragraph 0084) teaches a chamber cleaning temperature of 400°C. Shang et al. (col. 6, line 17) teaches "a susceptor temperature of 360°" in the cleaning of process chambers. Neither Pang et al. nor Shang et al., alone or in combination with the other, teaches or suggests that carrying out a cleaning chamber process having the parameters recited in amended claim 1, and defined by claims 5-8, would be successful.

Thus, an "obvious to try" rationale would be necessary to sustain a rejection of claims 5-8, as dependent from amended claim 1, as obvious over Pang et al. in view of Shang et al., in contravention of *In re O'Farrell*, cited hereinabove.

Therefore, it is respectfully submitted that Pang et al. in view of Shang et al. fails to render claims 5-8 obvious under 35 U.S.C. 103(a). Reconsideration and allowance of claims 5-8 is therefore respectfully solicited.

Pang et al. in view of Shang et al. fails to teach invention of claims 11 and 12

It is respectfully submitted that Pang et al. in view of



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Shang et al. fails to teach or suggest all of the limitations of claims 11 and 12, as dependent from amended claim 9, since Pang et al. in view of Shang et al. fails to teach or suggest a method of cleaning a process chamber, comprising "providing a gas mixture comprising nitrous oxide and nitrogen trifluoride in a nitrous oxide:nitrogen trifluoride volume ratio of at least about 0.8", in combination with "generating a plasma from [a] gas mixture using a radio frequency power of from about 1 watt/cm<sup>2</sup> to about 20 watts/cm<sup>2</sup>", as set forth in amended claim 9 and defined by claims 11 and 12 as dependent therefrom according to the Federal Circuit decision in *In re Fine*.

Neither Pang et al. nor Shang et al., alone or in combination with the other, teaches or suggests that carrying out a cleaning chamber process having the parameters recited in amended claim 9, and defined by claims 11 and 12, would be successful.

Thus, an "obvious to try" rationale would be necessary to sustain a rejection of claims 11 and 12, as dependent from amended claim 9, as obvious over Pang et al. in view of Shang et al., in contravention of *In re O'Farrell*, cited hereinabove.

Therefore, it is respectfully submitted that Pang et al. in view of Shang et al. fails to render claims 11 and 12 obvious under 35 U.S.C. 103(a). Reconsideration and allowance of claims 11 and 12 is therefore respectfully solicited.

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*Pang et al. in view of Shang et al. fails to teach invention of claims 19 and 20*

It is respectfully submitted that Pang et al. in view of Shang et al. fails to teach or suggest all of the limitations of claims 19 and 10, as dependent from amended claim 13, since Pang et al. in view of Shang et al. fails to teach or suggest a method comprising "...forming a gas mixture...maintaining a temperature of from about 65°C to about 300°C in [a] process chamber", in combination with "forming nitric oxide radicals and fluoride radicals in the process chamber by generating a plasma from said gas mixture using a radio frequency power of from about 1 watt/cm<sup>2</sup> to about 20 watts/cm<sup>2</sup>", as set forth in amended claim 13 and defined by claims 19 and 20 as dependent therefrom according to the Federal Circuit decision in *In re Fine*.

Neither Pang et al. nor Shang et al., alone or in combination with the other, teaches or suggests that carrying out a cleaning chamber process having the parameters recited in amended claim 13, and defined by claims 19 and 20, would be successful.

Thus, an "obvious to try" rationale would be necessary to sustain a rejection of claims 19 and 20, as dependent from amended claim 13, as obvious over Pang et al. in view of Shang et al., in contravention of *In re O'Farrell*, cited hereinabove.

Therefore, it is respectfully submitted that Pang et al. in

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view of Shang et al. fails to render claims 19 and 20 obvious under 35 U.S.C. 103(a). Reconsideration and allowance of claims 19 and 20 is therefore respectfully solicited.

*Conclusion*

Every effort has been made to amend applicant's claims in order to define his invention in the scope to which it is entitled. Accordingly, reconsideration and allowance of claims 1-20 is respectfully solicited.

Respectfully submitted,



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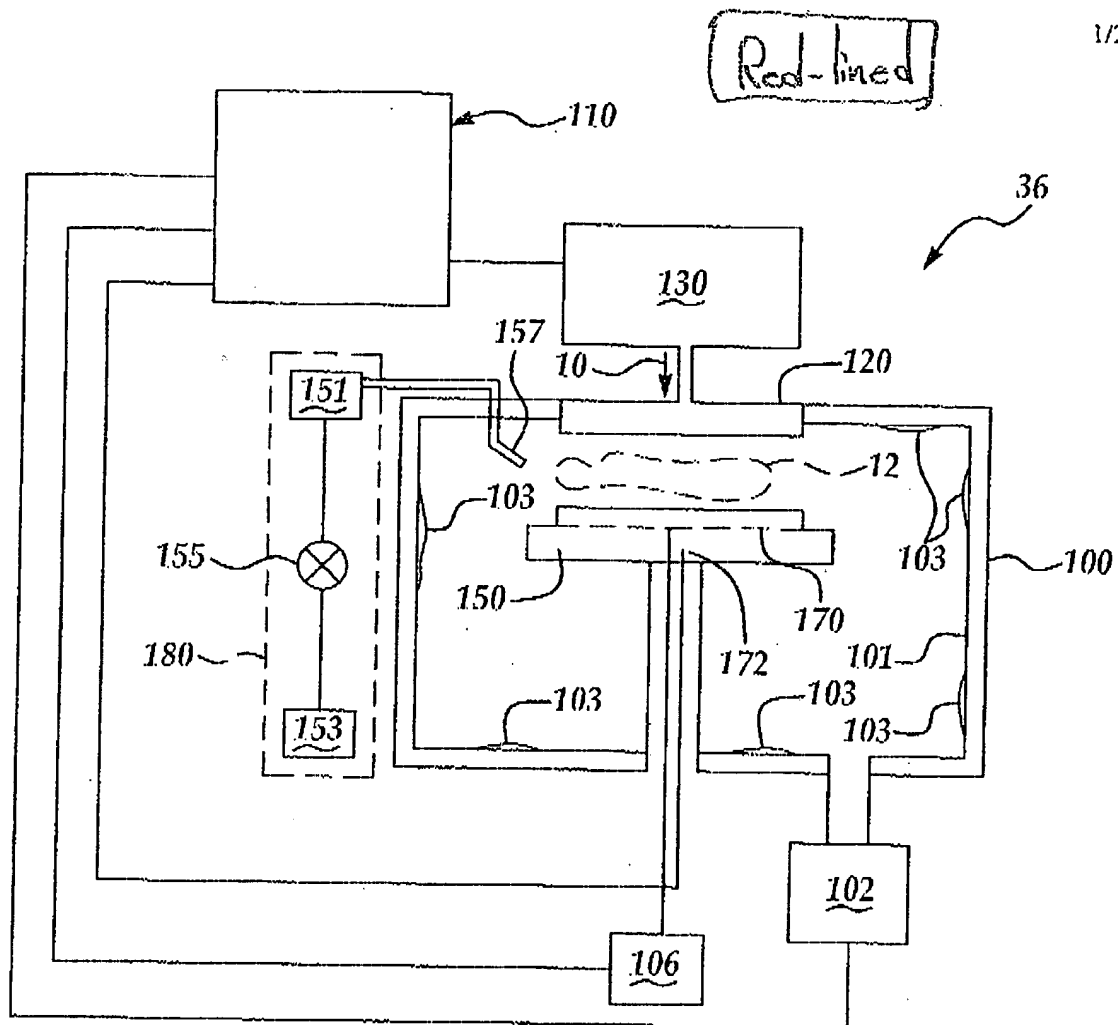


Figure 1  
(Prior Art)

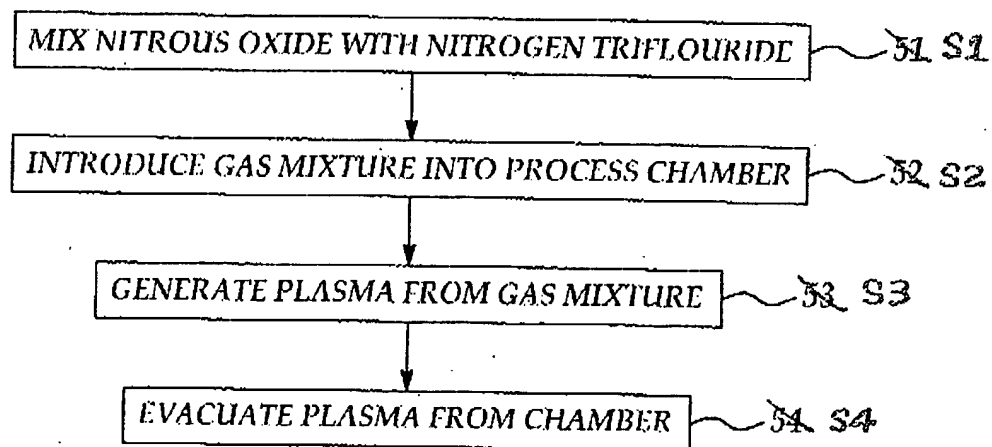


Figure 2